TRIGONOMETRIC EQUATIONS: RECIPROCAL FUNCTIONS: The trigonometric ratios of secant, cosecant and cotangent are called reciprocal functions as they are reciprocals of sine, cosine and tangent respectively.

$$\sin \theta = \frac{1}{\csc \theta} \quad \cos \theta = \frac{1}{\sec \theta} \quad \tan \theta = \frac{1}{\cot \theta}$$

$$\csc \theta = \frac{1}{\sin \theta} \quad \sec \theta = \frac{1}{\cos \theta} \quad \cot \theta = \frac{1}{\tan \theta}$$

As the calculator does not have specific keys for secant, cosecant and cotangent, these functions first need to be converted to sine, cosine and tangent.

This requires taking the reciprocals of both sides of the equation.

2.1 WORKED EXAMPLE

Solve:

a) $\csc A =$

b) $\sec A =$

c) $\cot A =$

2.2 WORKED EXAMPLE

Solve $\csc x = -3$ for $-180° \leq x \leq 180°$